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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 09/607,649 | 06/30/2000 | Chin Long Cheng | 609920600005 | 9489 |
| 7590 | 10/06/2003 | | EXAMINER | |
| David B Cochran North Point 901 Lakeside Avenue Cleveland, OH 44114 | | | ahn, sam k | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2634 | 2 |
| DATE MAILED: 10/06/2003 | | | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|-----------------|--------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 09/607,649 | CHENG ET AL. |
| Examiner | Art Unit | |
| Sam K Ahn | 2634 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 30 June 2000.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-19 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-19 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 13 July 2000 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.

2. Certified copies of the priority documents have been received in Application No. _____.

3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) Notice of References Cited (PTO-892) 4) Interview Summary (PTO-413) Paper No(s). _____ .

2) Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) Notice of Informal Patent Application (PTO-152)

3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ . 6) Other: _____ .

DETAILED ACTION

Drawings

1. The drawings are objected to because multipliers (110-1 ~ 110-N in Fig.1 and 210-1 ~ 210-N in Fig.2) are illustrated as adders. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
2. The drawings are objected to because shift register is not illustrated in figure 2. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The abstract of the disclosure is objected to because it exceeds 150 words. Correction is required. See MPEP § 608.01(b).

Claim Objections

4. Claim 1 is objected to because of the following informalities: It is suggested changing “a prior sampling instance”, recited in line 3, to “a previous sampling instance” for consistent usage of terminology. Appropriate correction is required.

5. Claim 19 recites the limitation "the current sampling instance" in 3. There is insufficient antecedent basis for this limitation in the claim. It is suggested to change it to "--- a current sampling instance ---".

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 6-8 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In claim 6, line 2, surface-acoustic-wave (SAW) device was not described in the specification. In claim 7, line 2, charge-coupled device (CCD) was also not described in the specification. In claim 8, lines 1-2, a rotating-reference generator including a plurality of storage elements configured as end-around shift registers was not described in the specification. These elements were not described in the specification in such a way as to reasonably convey to one skilled in the art.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-4 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: in claim 1, line 3. The claim is an apparatus claim comprising means. However, it does not recite by what means the correlation lag is generated.
8. Claims 5-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claims 5 and 13, ~~to~~ lines 13-14 and lines 14-15, respectively, recites "a correlation lag for the present instance based on the previous value of the correlation lag". First of all, there is insufficient antecedent basis for the limitation "the present instance". Secondly, it is unclear what "the previous value of the correlation lag" is referring to. Is it referring to the value of correlation lag of the previous sampling instance?
9. Claim 9 and 10 recites the limitation "the stream of spread-spectrum signal samples" in line 1. There is insufficient antecedent basis for this limitation in the claim.
10. Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 11, line 1, "it is unclear as to which correlation lags are being referred to.

Is it the correlation lag of the present sampling instance or previous sampling instance or both?

11. Claim 19 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 19, line 4, "plurality of previous sampling instances" are stored in a shift register. In computing for the current sampling instance, it is based on "a previous sampling instance". Is this a different sampling instance from the sampling instance stored in the shift register? Or, is it a common sampling instance? Again, in lines 7-8, recites "a previous sampling instance". It is unclear whether "a previous sampling instance" is a different sampling instance or a common sampling instance stored at the shift register.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

12. Claims 1-4 are rejected under 35 U.S.C. 102(e) as being anticipated by Krasner ('041).

Regarding claim 1, Krasner discloses an apparatus for correlating a spread-spectrum signal sample with a reference code or PN coefficients. (see Fig.2) Correlation lag may be defined here as a correlation performed with a slight delay. Krasner teaches that correlation lag of sampling instances are generated and enters loop integrator (210). Here, the correlation lag is stored in a storage means or a shift register. (note col.4, lines 50-57) As this correlation lag of sampling instance becomes the correlation lag of a prior sampling instance, a correlation lag of a current sampling instance enters the loop integrator. Then, correlation lag of current sampling instance is generated based on the correlation lag of prior sampling instance as it flows in a loop to a summer (208).

Regarding claims 2-4, Krasner discloses all subject matter claimed, as applied to claim 1. Krasner further teaches an even-correlation lag (802) and an odd correlation lag (804). (see Fig.8)

Allowable Subject Matter

13. Claims 5-19 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, first and second paragraph, and claim objection set forth in this Office action.
14. The following is a statement of reasons for the indication of allowable subject matter:
Present application discloses a method and apparatus for correlating a plurality of spread-spectrum signal sample with a reference code. It comprises a spread spectrum signal storage means, subtraction means, multiplication means, correlation lag storage means and addition

means configured in such a way that correlation lag for a present sampling instance is based on correlation lag of a previous sampling instance. Closest prior art, Krasner, teaches a GPS receiver comprising correlator generating correlator lag for present sampling instance based on a previous sampling instance. However, Krasner does not teach generation of correlation lag for present sampling instance through configuration of all the elements recited in the independent claims.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Burns teaches a CDMA receiver comprising a correlator with scheduled operations.

Dent et al. teach a matched filter generating correlation values with reduced number of multipliers and adders resulting in a reduced power consumption.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Sam Ahn** whose telephone number is **(703) 305-0754**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Stephen Chin**, can be reached at **(703) 305-4714**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

P.O. Box 1450

Alexandria, VA 22313-1450

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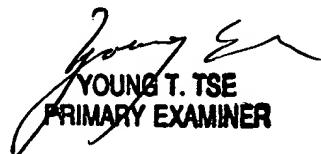
or faxed to:

(703) 872-9306

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Sam K. Ahn
9/23/03



YOUNG T. TSE
PRIMARY EXAMINER